

Abstract

**Method for determining endpoint of etch layer
and etching process implementing said method
in semiconductor element fabrication**

A method of determining the endpoint of an etch layer in a semiconductor element fabrication, wherein said element is comprised of at least a first material layer, a second material layer on said first material layer, said endpoint determining method comprises the steps of (i) determining the total emission intensity wavelength of the first material layer; (ii) determining the total emission intensity wavelength of the second material layer; (iii) plotting the scalar of the wavelength differential of the upper and lower layers; and (iv) choosing the highest peak of wavelength differential as the best range of endpoint detection wavelength.

This method is particularly useful for etching stacks where the first and second material layers have endpoint emission wavelengths that are close to each other. This include nitrogen-rich silicon layer which is overlaid by an antireflective coating (ARC) layer, e.g. silicon nitride, Si_3N_4 overlaid by bottom antireflective coating (BARC).

FIGURE 4